Abstract of the Disclosure

A system is disclosed providing accurate compression, storage, transmission and reconstruction of both simulated and empirical data representing terrain and other physical or hypothetical signals or surfaces, in one or multiple dimensions. In one embodiment, a gradient of an original surface is generated, and the data representing that gradient is compressed, then stored and/or transmitted. Reconstruction of the gradient yields an accurate representation of the original gradient. An alternative embodiment includes taking a second gradient of the original surface before compression, in which case reconstruction yields the second gradient, from which the first gradient can also be recovered.